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AMENDED CLAIMS

[received by the International Bureau on 12 October 2004 (06.10.04) (pages 04)]

1. A process for extruding tubular products, particularly blown plastic foil hoses, comprising the steps of feeding a pressurized material, particularly plastic material into an inlet of an extruder nozzle, and forcing this material flow through a duct formed between relatively rotating outer and inner nozzle components, then shaping the tubular product by pressing the material flow through an annular drawing aperture at the duct end of the extruder nozzle, ***characterized*** in that the material flow entering the extruder nozzle (1) is distributed along the duct by being first led, in the direction of progress of the radial entering material flow into an annular expansion chamber (7) connected directly to the radial inlet (6), the cross-section of said expansion chamber (7) is selected at least one order of magnitude greater than that of the radial inlet (6); and when the expansion chamber (7) has been completely filled up by the material flow whose pressure has become higher than the flow resistance of an homogenizing ring channel (13) having a cross-section narrowed to and connected directly to the annular expansion chamber (7), then the material flow is moved in cross direction, preferably axially to the entering radial direction thereof, from the expansion chamber (7) into said homogenizing ring channel (13), and it is homogenized by the relative rotation of surfaces formed by the fixed external nozzle component (2) and the rotating internal nozzle core (3), and by these surfaces at least partly the homogenizing ring channel (13) and/or the expansion chamber (7) is/are delimited, and the material flow is led to said drawing aperture (14) by way of a helical forced movement, wherein the material flow between the radial inlet (6) and the drawing aperture (14) has a single main direction change only.

2. A process according to Claim 1, ***characterized*** by maintaining the material flow in the extruder nozzle at the required temperature by internal heat generated in the material itself as a result of kneading work performed by forced motion of the material flow.

3. An extruder nozzle for producing tubular products, particularly blown plastic foil hoses from pressurized materials, comprising an external nozzle component and an internal nozzle core embedded therein, with a material distribution duct formed between the external nozzle component and the internal nozzle core; the external nozzle component having an inlet for receiving the pressurized material, which is connected to a drawing aperture through the duct, ***characterized*** in that the external nozzle component (2) is fixed; the internal nozzle core (3) of the extruder nozzle (1) is rotatable embedded in the fixed external nozzle component (2), and provided with a rotary drive; said material distribution duct comprises an annular expansion chamber (7) connected directly to the radial inlet (6) of the fixed external nozzle component (2); the cross-section of the annular expansion chamber (7) is at least one order of magnitude greater than that of the radial inlet (6); said material distribution duct comprises a homogenizing ring channel (13) connected with its one end directly to the annular expansion chamber (7) and its cross-section is narrowed to the required proportion in comparison to the annular expansion chamber (7), and its other end is connected to the drawing aperture (14).

4. An extruder nozzle for producing tubular products, particularly blown plastic foil hoses from pressurized material, comprising an external nozzle component and an internal nozzle core embedded therein, and a material distribution duct arranged between the external nozzle component and the internal nozzle core; the external nozzle component having an inlet for receiving at least one pressurized material, which is connected to a drawing aperture through said duct, ***characterized*** in that the extruder nozzle (1) is suitable for producing multi-layer tubular products, mainly foil hoses (T'), wherein the material distribution duct comprises a first annular expansion chamber (7) connected to the first inlet (6) receiving a first pressurized material flow; the cross-section of said expansion chamber (7) is greater, preferably at least one order of magnitude greater than that of the first inlet (6), furthermore, the material distribution duct comprises a first homogenizing ring channel (13) connected preferably co-axially to the first expansion chamber (7), and a cross-section of the first homogenizing ring channel (13) is narrowed to the required proportion compared to said expansion chamber (7), and is partly delimited by a surface (28) of a delimiting sleeve (27) embedded freely rotatable in

the external nozzle component (2); the delimiting sleeve (27) has another skirt surface (31) delimiting a second homogenizing ring channel (33) of a cross-section narrowed to the required proportion, one of the ends of which is connected to a second radial inlet (34) receiving a second material through a second annular expansion chamber (32), its cross-section is greater, preferably at least one order of magnitude greater than the cross-section of the second homogenizing ring channel (33) or the radial second inlet (34); the other ends of the first and second homogenizing ring channels (13, 33) are preferably connected to a common joining chamber (35) which is connected to the drawing aperture (14); the external nozzle component (2), the internal nozzle core (3), and the at least one delimiting sleeve (27) are arranged relatively rotatable, and the external nozzle part (2) and/or the internal nozzle core (3) and/or the delimiting sleeve (27) is connected to a rotary drive.

5. An extruder nozzle according to Claim 3 or 4, ***characterized*** in that the annular expansion chamber (7, 32), the homogenizing ring channel (13, 33), and the drawing aperture (14), and in a given case the joining chamber (35), are coaxially formed and arranged to a longitudinal axis (4) of the extruder nozzle (1).

6. An extruder nozzle according to any of Claims 3-5, ***characterized*** in that only the lower end of the rotatable nozzle core (3) is embedded in bearings (11, 12) in the external nozzle component (2), allowing a limited radial displacement of an upper end of the nozzle core (3), and the upper end of the nozzle core (3) adjacent to the homogenizing ring channel (13; 33) is arranged in a bearing-free, self-positioning manner.

7. An extruder nozzle according to any of Claims 3-6, ***characterized*** in that the rotatable nozzle core (3) is axially divided, one of its parts (3A) provided with an opening delimiting the drawing aperture (14) can be changed for different products.

8. An extruder nozzle according to any of Claims 3-7, ***characterized*** in that the external nozzle component (2) is axially divided into parts (2A, 2B, 2C, 2D), wherein there is an axial distance (24) and at least one connecting ring (25) between the adjacent parts (2B, 2C) for reducing thermal load of the parts (2C, 2D) comprising the bearings (11, 12) of said nozzle core (3).

9. An extruder nozzle according to any of Claims 3-8, ***characterized*** in that it is provided at least one gap-controlling means, preferably insert (38, 39), having at least one groove (38B; 39B) formed as to control the size and shape of the material flow cross-section in the homogenizing ring channel (13; 33) in a predetermined manner.

II. Statement under Article 19(1):

In the new Claim 1 a few distinctions have been made in order to assist the clearer interpretation of the claimed subject matter as follows:

a) The expansion chamber (7) is directly connected to the homogenizing ring channel (13);

b) The homogenizing ring channel (13) is directly connected to the expansion chamber (7);

c) The material flow has only a single main direction change between the radial inlet and the drawing aperture, that is, in the expansion chamber (7) the radial material flow is forced to move in cross direction.

In the new Claim 3 we also made the distinctions a) and b) as mentioned above.

The above amendments have sufficient support in the original disclosure (no new matter has been introduced):

- Support for the "direct connections": Fig. 1 to 3; and page 8, lines 10 – 20; page 9, last paragraph;
- "Single main direction change": Figures; and page 11, lines 1-5; page 16, lines 11-24.

Applicant respectfully submits that each of the claims now pending in the application contains patently distinct subject matter over all of the references of record.